

PATENT

THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Ruggero M. Santilli)	
)	
S.N.:	09/826,183)	Examiner: CEPHIA D. TOOMER
)	
Filed:	April 4, 2001)	Art Unit: 1714
)	
For:	NEW CHEMICAL SPECIES OF A)	
	MAGNECULE)	
)	

DECLARATION UNDER 37 CFR 1.131 AND 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Ruggero M. Santilli, declare and state:

1. I am the Applicant of the above-identified patent application and the inventor of the subject matter described and claimed therein.

2. BACKGROUND INFORMATION

a. I am the sole inventor of the new chemical species of magneccules consisting of individual atoms, dimers (also called radicals) and molecules bonded together by a new attractive force among opposing magnetic polarities of toroidal polarizations of the orbits (also called orbitals) of peripheral atomic electrons when (and only when) exposed to

extremely intense electric and magnetic fields (such as those at atomic distances of electric arcs). This is not a natural phenomena but rather one created by the extreme and intense electric and magnetic fields. Further, not only have I discovered this species under such conditions, I have been able to collect a pure population of the magneules in a stable form.

b. The name magneules has been suggested by the inventor to distinguish the new species from conventional molecules, as well as to denote the primarily magnetic nature of the new bond. However, any other name would equally fit, provided that the selected name identified the presence of bonds that are not of valence nature.

c. The discovery by the inventor of the new chemical species of magneules was independently confirmed by an Affidavit signed by Mr. Leon Toups on September 26, 2001 (Attached Exhibit # 1), as well as by the scientific community at large as indicated below. This affidavit of Mr. Leon Toups was signed and submitted to the USPTO in the reexamination case of U.S. Patent No. 6,113,748 to Richardson (Reexam Control No. 90/006,125), which resulted in cancellation of all the claims of this patent. Mr. Richardson, who worked for Toups Technology, Inc., observed the the results and evidence of my consulting work with Toups Technology, Inc. and apparently had filed a patent application claiming a new gas that was denser than known gases, as evidenced by the longer time it took for the gas to permeate a latex balloon. He included a dependent claim that claimed that the gas was a "magnecule" and the support for the claim in the specification was that a well-known independent scientist believes that the gas has magnetic characteristics that renders it denser. He never mentioned my name because it would have been a flag to me that he was attempting to steal my invention, although using the term "magnecule" was sufficient for me.

The Examiner notes that in another patent to Richardson (6,299,656), filed December 29, 1998, Richardson discloses the use of "magnecules" as an additive. It is interesting to note that on the one hand, the Examiner may be finding it hard to accept this new species as contrary to conventional chemistry; however, on the other hand, has accepted the existence of this species in two of Richardson's patents. I question if the patent office may be estopped from denying the existence of the species where it has been accepted in at least two applications by Richardson.

Please note that Richardson again states that the magnecule is impliedly my invention in col. 7, lines 16-24 where he states:

Qualified laboratories in Europe and in the United States have confirmed (the) presence of large/heavy **constituents not conforming to any known compounds, for which the term "magnecules" has been suggested**, based upon some theoretical considerations **advanced by an eminent physicist familiar with sub-nuclear composition and reactions**. Whatever the technical aspects, knowledge of them is not essential to the practice of the invention

The advanced physicist he is referring to is me and this proves that the species was discovered by me before he applied for his application, therefore, this cite can not be used as prior art against me because Richardson admits he did not discover the species and that I did before his application for intended use of my species of magnecules. Further, the reexam case, in which Mr. Toups provided an independent affidavit as discussed above, further proves that I discovered the species before Mr. Richardson and that Mr. Richardson effectively watched my work and evidence during his employment with Toups Technology (under a Non-Disclosure/Confidentiality Agreement) and took the information for his use. Additionally, the Examiner is reminded that the current application is a continuation-in-part of U.S. Patent

Application Serial No. 09/133,348 filed August 13, 1998, which pre-dates the filing of the Richardson cited patent (the '656 patent). This parent application discussed in detail the new species of magnecules. The reasons for the CIP application are discussed below. Therefore, it can not be used as a prior art citation against this application.

The Examiner is looking for independent collaboration of my invention. It is interesting to note that Richardson himself, since his relationship with Toups Technology has terminated, continues to obtain patents claiming as dependent claims that a produced gas is a magnecule and he further gives credit to me for the discovery of the species.

Further, Leon Toups was President of Toups Technology, an independent company, and he acknowledges in his affidavit that I am the inventor of the species and that independent evidence was obtained from independent laboratories across the country, as shown in the affidavit as well as in Figs. 7-25 of the present application. See paragraphs 2, 4, 5, 6, 7 and 8 of Mr. Toups' affidavit, together with corresponding exhibits referred to in each paragraph. Mr. Toups refers to evidence obtained by the National Technical Systems (NTS) Labs at McClelland Air Force Base, an independent letter from Dr. Louis A. Dee, the NTS Lab Director. Further, the affidavit of Mr. Toups confirms that a highly regarded scientific publisher, KLUWER ACADEMIC PUBLISHERS of Amsterdam, had agreed to publish my papers on this new discovery. This highly regarded independent publisher has several stages of peer review before it decides whether or not to publish such scientific material. It is an honor to be chosen for publication and such a decision is credible evidence of peer review recognition in the scientific community. If the peer review staff though there was no merit to my findings, they would never have agreed to publish my

work. A pre-publication book was provided to the Examiner in this case and is herein incorporated by reference.

The present application was filed because Examiner Lovering felt that if an arc created the new species, then in theory it was already in existence. However, he agreed that no prior art would inherently or otherwise disclose a pure population of the species, as the arc itself would also destroy the species. He indicated that although claiming a substantially pure population may be allowable subject matter, he felt that the specification of the parent application did not expressly support it, even though an argument could be made that the specification of the parent application inherently did support it. It was agreed that a CIP application should instead be filed with a simplified specification, as all the mathematical calculations were not really needed to describe the invention.

d. The Examiner has requested a list of keyword to facilitate a search. The requested list of "keyword" that can be used for additional searches are: "clusters", "chemical species", "substances", "chemical bonds", "orbitals", "magnetic polarization", "quantum electrodynamics" and related keywords.

e. The Examiner has requested a list of citable databases that can be searched. The requested citations that can be used for additional searches are those of various Chemical Societies and their various publications.

f. During the years from 1990 to 1997 I conducted extensive searches in scientific and patent libraries and could not discover any prior art, that is, any truly new chemical species, because all pre-existing chemical species dealt with clusters of atoms bonded together by one or another type of valence bond, such as covalence, metallic valence, etc.

g. The sole prior art used by the inventor in Patent Application Serial No. 09/826,183 is that of "quantum electrodynamics," namely, the field of physics providing the laws obeyed by atomic electrons under external electric and magnetic fields. The publications in quantum electrodynamics accumulated during the 20-th century are simply too many even for a partial listing. In fact, quantum electrodynamics describes the well known fact that charged particles under an external magnetic field move along a circular orbit perpendicular to the axial symmetry of the field or, more properly, in a toroid due to uncertainties and perturbations. However, following extensive search, no prior publication could be identified by the inventor on the use of said magnetic field to control the orbits of atomic electrons for an industrially meaningful invention for reasons itemized in detail below.

3. LIST OF PATENTS ON MAGNECULES

Following years of research, the invention of the new chemical species of magnequles was announced for the first time under the name of "electromagnetion" in

PATENT REF. [1] Patent Application number 08/785,797 filed on January 1, 1997, by R. M. Santilli, subsequently abandoned and replaced with the

PATENT REF [2] patent application number 09/106,170 filed on June 29, 1998, by R. M. Santilli, for the new species of magnequles, of which the current patent application number 09/826,183 filed on April 4, 2001 is a continuation-in-part. Magnequles are also treated in details in

PATENT REF. [3] patent application 09/372,278 filed on August 11, 1999, by R. M. Santilli replaced by the continuation in number 09/896,422 filed on June 29, 2001, now U.S. Patent No. 6,673,322. This patent lists most of the scientific evidence on the new chemical

species of magnecoles of patent application number 09/826,183 in the list of publications considered by the Examiner.

To the undersigned best knowledge, only two patents mentioning magnecoles have been granted to date. They are:

PATENT REF. [4] U.S. Patent Number 6,299,656 filed on October 9, 2001, granted to W. H. Richardson, and

PATENT REF. [5] U.S. Patent number 6,113,748 also granted to W. H. Richardson, which latter patent has been reexamined at my request and the claims canceled as discussed above.

It should be noted that patent references [4] and [5] merely mention the new chemical species of magnecoles by indicating that it has been discovered by a "famous scientist" without identifying the name of the underwriter, as denounced by Mr. Leon Toups in Exhibit # 1.

4. SCIENTIFIC PUBLICATIONS ON MAGNECOLES

a. The sole scientific publications on the new chemical species of magnecoles known to the undersigned are the following. After the filing of patent application number 09/106,170 filed on June 29, 1998, and only thereafter, the inventor published his new discovery in the scientific paper

SCIENTIFIC REF. [1] "Theoretical prediction and experimental verifications of the new chemical species of magnecoles," by Ruggero Maria Santilli published in the Hadronic Journal Vol. 21, pages 789-894, 1998, an integral copy of which is enclosed to this Affidavit Exhibit 2. This publication presents for the first time in scientific history the experimental evidence of

individual magnecules at the gaseous, liquid and solid levels, but does not consider the main objectives of this instant patent application.

5. TECHNICAL REASONS FOR THE LACK OF PRIOR ART

a. The absence of prior scientific and patent art is first due to the known fact that the control; of the orbits of atomic electrons requires extremely strong magnetic fields of the order of trillions of Gauss, that cannot be possibly reached in any laboratory on Earth. Being a theoretical physicist by profession, the inventor succeeded in controlling atomic orbits via the discovery that the magnetic field at atomic distances from electric arcs has indeed the intensity needed to control atomic orbits. In fact, said field is given by the formula $H = I/r$ where I is given by the currents in Amperes and r is the distance in centimeters. It is then easy to see that for currents with 5,000 A and atomic distances of $1/100,000,000$ cm H is of the order of 5,000,000,000,000 Gauss, thus being fully sufficient to control the space orientation of atomic orbits.

b. Yet another reason for the absence of prior art in the scientific literature is the additionally well known fact that toroidal polarizations of atomic orbits are instantly lost due to temperature, the moment the external magnetic field is removed, thus having no practical value. Being a theoretical physicist by profession, the inventor resolved this additional problem by discovering the fact that magnetically polarized atoms at short distances from electric arcs are first aligned one with the other with opposing magnetic polarities (see Fig. 6 of the enclosed scientific paper on Santilli magnecules by the Prof. J. V. Kadeisvili - Exhibit 3), and are additionally compressed one against the other by Coriolis and other forces, thus leaving the plasma around the electric arc in a magnetically bonded clusters. It then follows that the

polarizations of individual atoms are indeed lost due to temperature, but the polarizations of magnetically bonded atoms are not lost due to temperature since rotations and vibrations due to temperature now occurs for the bonded clusters as a whole.

c. The first reason for the lack of prior art is the belief widespread throughout the physical and chemical literature that gases such as hydrogen cannot be magnetically polarized because known to be diamagnetic. Following decades of research reported in the Scientific Reference [3] below, in order to resolve this problem by the inventor as explained below.

d. The discovery of the new chemical species of magneccules was subsequently announced to the scientific world with the post Ph.D level monograph REF. [2] "Foundations of Hadronic Chemistry with Applications to New Clean Energies and Fuels," by Ruggero Maria Santilli, published by Kluwer Academic Publishers, Boston-Dordrecht-London, December 2001 (pre-publication book enclosed - Exhibit 4). This monograph summarizes the long and laborious research conducted by the undersigned and initiated at Harvard University in the early 1980s with grants from the U. S. Department of Energy under the Carter Administration. Chapter 8 of the monograph then summarized the scientific status of the new chemical species of magneccules as of December 2001. Note that there is no essentially technical or other novelty of said Chapter 8 and the preceding scientific Ref. [1].

e. Subsequently, the following paper was published: SCIENTIFIC REF. [3] "The novel magneccular species of hydrogen and oxygen with increased specific weight and energy content," by Ruggero Maria Santilli published by the International Journal of Hydrogen Energy Vol. 28, pages 177-196, 2003, Oxford, England, an integral copy of which is also enclosed as Exhibit 4. This paper presents dramatic additional evidence of support for the

existence of the new chemical species of magnecules since it presents experimental evidence on the existence of a species of hydrogen with seven times the specific weight of conventional hydrogen. Since the hydrogen atom has only one valence electron and can only form the conventional molecule $H(2)$, the experimental detection of $H(14)$ confirms the existence of the new non-valence bond beyond credible doubt.

f. SCIENTIFIC REF. [4] comprises signed statements by the Directors of the laboratories that conducted the measurements published in Ref. [3] following numerous repetition of the same. It should be noted that the signed statement herewith referred to have been released by said laboratory directors to the undersigned but never published.

g. The last scientific contribution on the new chemical species of magnecules known to the inventor is the following pre-print REF. [5] "Experimental evidence on a new heavy species of hydrogen with Santilli magnecular structure" by J. V. Kadeisvili, preprint of August 2003, an integral copy of which is herewith enclosed. (Exhibit 5). The latter paper has been submitted by its author for publication but the Journal of submission or the possible publication date is unknown to the undersigned. The latter paper by an independent scientist provides additional independent confirmation on the new chemical species of magnecules.

In particular, the last section of Scientific Ref. [5] is important because it outlines the extreme difficulties experienced by the inventor in detecting the new chemical species of magnecules via the sole equipment available at this time, namely, equipment conceived and developed to detect the different chemical species of molecules. In turn, this explains the reason why the new chemical species of magnecules escaped detection for over 100 years.

6. SCIENTIFIC CREDIBILITY

a. The scientific credibility of the preceding publications is beyond “credible” doubt because all quoted publishers have a long reputation of conducting extensive reviews by qualified experts in the field prior to any publication. No exception to this rigid rule of scientific scrutiny can be “credibly” voiced because said publishers would lose their credibility in case of publication of work without serious review, and the loss of credibility would imply instantaneous disqualification in the scientific world.

b. For instance, Kluwer Academic Publisher in the Netherlands, the publisher of the post Ph. D. level monograph Scientific Ref. [2] by the underwriter is at this moment, the most prestigious scientific publisher in the world also in view of its recent acquisition of Springer-Verlag from Heidelberg in Germany, the latter being the most historical scientific house. Prior to the publication of the monogram [PhD in Scientific Ref. [2], that included an international announcement of the new chemical species of magnecules, Kluwer Scientific Publishers submitted the manuscript by the underwriter to extremely severe scrutiny at the publisher’s editorial offices in two continents (Boston, Massachusetts, USA; Dordrecht, The Netherlands; and London, England), for which severe scrutiny lasted for nearly one year, from late 2000 to December 2001, and required numerous technical revisions, besides editorial and final linguistic controls all done by experts.

c. Similarly, the publication of Scientific Ref. [3] was done by Pergamon Press in Oxford, England, another scientific house whose extremely rigorous reviews and controls cannot be voiced without instant disqualification because it would be the same as stating that publications by Princeton University Press have not credible. In fact, said publisher submitted the paper to five independent reviewers over about one year of investigations and

verifications, including a review of the experimental results prior to permitting the paper to be published.

d. It should be stressed that, due to the novelty, only a handful of chemists and physicists are aware of the new chemical species of magnecules. Also, the sole judgment that counts in science is that by EXPERTS, that is, scientists with proved ethical stand who have a list of publication specifically in the field, as an evident condition to qualify as "experts." With the additional clear understanding that new scientific discoveries are debated in science for decades, and this is also the case for the new chemical species of magnecules, any doubt on the credibility of the Scientific Refs. [1-5] implies the loss of credibility and the existing from the boundaries of a professional conduct.

7. EXPERIMENTAL VERIFICATIONS

a. The experimental evidence supporting the new chemical species of magnecules is massive and compelling. This experimental evidence has been reported in: patent application 09/372,278 filed on August 11, 1999, by R. M. Santilli replaced by the continuation in number 09/896,422 filed on June 29, 2001 recently allowed (US 6,673,322) ; the pending Patent Application number 09/826,183 filed on 04/04/01; and in the Scientific Refs. [3,4,5]. Evidently, this vast experimental evidence cannot possibly be repeated in this Affidavit.

b. In addition to the above evidence, the Examiner should consider the following additional facts specifically related to the invention and the related apparatus:

ADDITIONAL EVIDENCE # 1: According to the chemical species of molecules, the combustible gas produced by an electric arc between carbon electrodes immersed in water is composed 50% of hydrogen H(2) and 50% in carbon monoxide CO. However, CO is

combustible and, when burned in air, it produces CO(2). Therefore, in the event said molecular belief were correct, the combustion exhaust should contain at least 40% CO(2). Incontrovertible experimental evidence now available in two continents (since PlasmaArcFlow Recyclers are now available in the American and the European continents) has established that the CO(2) content of said exhaust is of about 4% to 5%, thus establishing a TENFOLD ERROR OF THE MOLECULAR HYPOTHESIS. Under an error of such a magnitude, any further belief in the validity of the molecular hypothesis, and the lack of need for non-valence bonds, are deceptive.

ADDITIONAL EVIDENCE # 2. Carbon is one of the biggest sources of energy on Earth because it combines with oxygen into CO by releasing a very large amount of heat (about 255 Kcal/mole as compared to about 57 Kcal/mole for the combustion of hydrogen and oxygen into water). Calculations conducted by Russian chemists and reported in detail in Section 7.10 of Scientific Reference [2], establish that, according to the molecular belief of Evidence # 1, the creation of 50% CO should release 2,250 BTU per standard cubic foot (scf) of gas produced. However, experimental evidence now available in two continents establishes that the maximal measured heat is about 250 BTU/scf of gas produced, this implying ANOTHER TENFOLD ERROR OF THE MOLECULAR HYPOTHESIS. Again, the continued belief in the molecular hypothesis for the gas herein considered and the denial of the need of new non-valence bonds, are deceptive.

ADDITIONAL EVIDENCE # 3. In the event the molecular belief of Additional Evidence # 1 were correct, the combustion exhaust of the gas should be composed of 40% H(2)O, 40% CO(2), no oxygen, the rest being given by atmospheric nitrogen and traces of other gases. In reality, according to measurements now conducted in two continents, the combustion exhaust of said gas contains 12% to 14% breathable oxygen, thus implying YET ANOTHER VERY

LARGE ERROR OF THE MOLECULAR HYPOTHESIS under which any continued belief in said hypothesis and denial of the existence of non-valence bonds are deceptive.

c. All in all, the scientific credibility and experimental evident of support for patent application number 09/826,183 are simply beyond doubt.

8. SOLE ADMISSIBLE PRIOR ART

The above documentation establishes that the sole prior art existing at the time of submission of patent application 09/826,183 on April 4, 2001, were: Parent Reference [3], patent application 09/372,278 filed on August 11, 1999, by R. M. Santilli replaced by the continuation in number 09/896,422 filed on June 29, 2001 recently allowed as noted above; and Scientific Reference [1]. No additional prior art has been or can be identified to qualify as true prior art of said patent application, namely as art that even marginally identifies the new chemical species of magneccules.

9. TECHNICAL REASONS FOR THE LACK OF PRIOR ART

a. The first reason for the lack of additional prior art is the belief widespread in the physical and chemical literature that gases such as hydrogen cannot be magnetically polarized because known to be diamagnetic. Following decades of research reported in the Scientific Reference [2], in order to resolve this problem, the inventor had to identify first a structure model of the conventional hydrogen molecule and other molecules. These protracted studies resulted in being able to provide the first exact representation of numerical data in scientific history, since the preceding studies missed a historical 2%. The same new model of the hydrogen molecule proved that the diamagnetic character of the hydrogen molecule is due in

effect to the fact that the magnetic properties of the two H-atoms are opposite to each other, thus cancelling out when considered at large distances (see Fig. 4.3, page 60, scientific Ref. [2]). In turn, this discovery established that, even though the hydrogen molecule cannot be magnetized, a magnetic polarization is indeed possible for each individual atoms of said molecule. It should be noted that the absence of these advances during the entire 20-th century are sufficient, alone, to prohibit any possible creation of a magnecules species of hydrogen.

b. An additional reason for the absence of prior scientific and patent art for patent application number 09/826,183 is the known fact that the control of the orbits of atomic electrons requires extremely strong magnetic fields of the order of trillions of Gauss, that cannot be possibly reached in any laboratory on Earth. Being a theoretical physicist by profession, the inventor succeeded in controlling atomic orbits thanks to the discovery that the magnetic field at atomic distances from electric arcs has indeed the intensity needed to control electron orbits. In fact, said field is given by the formula $H = I/r$ where I is the currents in Amperes and r is the distance in centimeters. It is then easy to see that for currents with 5,000 A and ordinary atomic distances of 1/100,000,000 cm, H is of the order of 5,000,000,000,000 Gauss, thus being fully sufficient to control the space orientation of atomic orbits.

c. Yet another reason for the absence of serious prior art in the scientific or patent literature is the other well known fact that toroidal polarizations of atomic orbits are instantly lost due to temperature the moment the external magnetic field is removed, thus having no practical value at all. Being a theoretical physicist by profession, the inventor resolved this additional; problem by discovering the fact that magnetically polarized atoms at short distances from electric arcs are first aligned one against the other with opposing magnetic polarities (see Fig. 6 of the enclosed scientific ref. [5] by the Prof. J. V. Kadeisvili), and are additionally

compressed one against the other by Casimir forces and other effects, thus leaving the plasma around the electric arc in magnetically bonded clusters. It then follows that the polarizations of individual atoms are indeed lost due to temperature, but the polarizations of magnetically bonded atoms are not lost due to temperature since rotations and vibrations now occur for the bonded atoms as a whole.

10. NOVELTY

a. It should be indicated that both the Patent Ref. [3] and the Scientific Ref. [1] were solely devoted to the proof of the EXISTENCE of magnecules. By comparison, patent application 09/826,183 is primarily devoted to the creation of a SUBSTANTIALLY PURE POPULATION of magnecules, namely a gas or liquid or solid whose constituents are entirely composed of magnecular clusters. These magnecules are created using apparatus and methods described in the specification of the instant patent application.

b. The substantially pure character of the new species of magnecules achieved in patent application number 09/826,183 is established by the mass spectrometric scans of its Figures 7, 13, 14, and other data in which each peak is not recognized by the computer among the 500,000 existing molecules. In this way, ALL clusters of the species presented in patent application number 09/826,183 have a magnecular structure.

c. It should be stressed that the scientific and technological difference between the creation of individual magnecules and the creation of a substantially pure species of magnecules is dramatic. In fact, the former does exist in nature and can be found in the immediate vicinities of lightings, but has no foreseeable use for various reasons, such as the inability to predict or control lightings, the absolute impossibility of separating magnecules

produced from lighting, etc. By comparison, a substantially pure population of magnecules DOES NOT exist in nature, and IT HAS BEEN ACHIEVED FOR THE FIRST TIME IN PATENT APPLICATION NUMBER 09/826,183.

d. As proved by experimental measurements, ordinary submerged electric arcs available in countless patents DO NOT produce a substantially pure population of magnecules since they produce a mixture of molecules and magnecules clearly shown in GC-MS scans. On the contrary, the production of a substantially pure population of magnecules with practical value requires the PlasmaArcFlow Apparata described in patent application number 09/826,183, plus a number of specifically conceived Methods for its proper use, including the proper selection of flow, temperature, pressure, additives, etc. for each given power available.

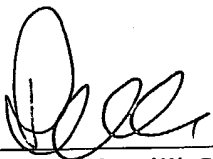
e. Finally, the above identified prior art (Patent Ref. [3] and Scientific Ref. [1]) does not address the creation of magnecules, let alone a substantially pure population of magnecules in specific fuels, such as hydrogen, oxygen, gasoline, diesel, etc. which creation is a primary objective of patent application number 09/826,183 due to the vast ecological gain produced by such magnecular structure.

f. In conclusion, the lack of significant prior art for patent application number 09/826,183, its novelty as well as its industrial and ecological significance are beyond doubt.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code, and that such willful false statements may jeopardize the validity of the application, or of any patent issuing therefrom.


Date: 1/28/04



Ruggero M. Santilli, Inventor/Applicant

Acting as witness and acknowledging its agreement with the above affidavit on behalf of Assignee Hadronic Press, Inc., I am:

Date: 1/28/04



Carla Santilli, President
Hadronic Press, Inc.

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